Jensen Bridge
Spanning Green River on U.S. Highway 40
Jensen
Uintah County
Utah

HAER No. UT-50

HAER UTAH, 24-JENS,

# **PHOTOGRAPHS**

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record Rocky Mountain Regional Office National Park Service U.S. Department of the Interior P.O. Box 25287 Denver, Colorado 80225

HAER UTAH, 24-JENS,

### HISTORIC AMERICAN ENGINEERING RECORD

# Jensen Bridge

HAER No. UT-50

Location:

Spanning the Green River on U.S. Highway 40

Jensen, Uintah County, Utah

UTM: 12/446996/641500

Quad: Jensen

Date of Construction: 1933

Designer:

Maurice Housecroft, Chief Bridge Engineer, Utah State Road Commission

Builder:

James J. Burke & Co., Salt Lake City

Present Owner:

Utah Department of Transportation

4501 South 2700 West

Salt Lake City, Utah 84119-5998

Present Use:

Vehicular bridge; to be replaced by a new vehicular bridge. Projected date

of removal is winter 1991 or spring 1992.

Significance:

The Jensen Bridge is a three span, steel Parker truss bridge set on concrete piers with concrete arch approach spans. It is one of two Parker truss bridges in the state and the only one that has two lanes and three spans;. It was also part of the first all-weather transcontinental highway in the country, the

Victory Highway.

Historian:

Jonathon C. Horn

Alpine Archaeological Consultants, Inc.

May 1991

### II. HISTORY

#### A. NEED FOR THE BRIDGE

In the late 1800s when northeastern Utah began to be settled, the Green River could only be crossed in a few places. One of these was at Jensen, Utah about 21 miles west of the Colorado state line. In about 1883, a ferry was established in the vicinity of Jensen by Skipsey Johnson. This ferry was bought by Hugh and Albert Snow and William Stewart in 1885 and moved to a point just north of the present crossing of U.S. Highway 40. Between 1882 and 1908, another ferry was operated somewhat downstream by Lars Jensen, for whom the town of Jensen was named.

Increased traffic and the need for more reliable passage over the Green River prompted local people to clamor for a bridge. A petition for the bridge was presented to the state legislature by Representative John N. Davis. The first bridge over the Green River at Jensen began being built in 1910 and was dedicated in 1911. This was a steel Howe truss bridge costing \$19,000, apparently built with state funds. By 1932, the bridge had become unsafe, especially for heavy truck traffic. In order to prevent its collapse, the bridge was patrolled 24 hours a day to keep overloaded trucks from attempting to cross. Realizing the poor condition of the bridge, the Utah State Road Commission obtained federal emergency relief funds for its replacement.

### B. CONSTRUCTION CHRONOLOGY

The Jensen Bridge was the first bridge built under the authority of the Utah State Road Commission over a major river in eastern Utah and the longest bridge built by the agency up to that time. Six bids were received for construction of the bridge. On January 9, 1933, James J. Burke & Co. of Salt Lake City was awarded the contract for the Green River Bridge at Jensen (Emergency Federal Aid

<sup>1.</sup> Ila W. Cowan, Jensen, Utah: Where Is It? Who Are Its People? (Provo: Community Press, 1979).

<sup>2.</sup> The Vernal (Utah) Express, 16 February 1933, p.1.

<sup>3.</sup> H. S. Kerr, speech presented at dedication of Jensen Bridge, 11 November 1933.

<sup>4.</sup> The Vernal (Utah) Express, 12 January 1933, p.1.

Project 96-E) with a low bid of \$85,377.5 The bridge was a steel Parker truss bridge designed by Maurice Housecroft, Chief Bridge Engineer with the Utah State Road Commission. Notice to proceed with construction was given on January 12, 1933, with work actually commencing on January 29.6 Because emergency funds were being used, the project needed to be completed by June 30, 1933. Steel fabrication was done by the Minneapolis Steel and Machinery Division of the Minneapolis-Moline Power Implement Company that had a Salt Lake City Branch. Steel structural members were apparently manufactured in Minneapolis and sent to the construction site by railroad. Other subcontractors that provided materials or services for the project were Fred Feltch for lumber, J. E. Murray of Springdale, Utah for concrete aggregates, and R. W. Snow for placement of reinforcing rods. The main contractor, James J. Burke & Co., provided the necessary equipment for the project, supervisory personnel, and some skilled labor. The rest of the labor force was hired from the local relief roles. It was expected that construction of the bridge would be very beneficial to the local economy through expenditures on supplies and by providing wages to local residents. 10

In order to construct the new bridge, the existing bridge had to be moved out of the way. The original bridge was moved 30 feet downstream onto a temporary trestle and continued to be used during the new bridge construction. While the bridge was being moved, traffic crossed the Green River on ice that had formed on the river. Once the new bridge was opened for traffic, on October 29, 1933, the old bridge was dismantled. All but the east approach was then moved to

<sup>5.</sup> Agness McNeil to James J. Burke & Co., 9 January 1933, Microfilm for Project F.A.P. 96-E, Utah Department of Transportation, Central Files, Salt Lake City; *The Vernal (Utah) Express*, 26 January 1933, p.1.

<sup>6.</sup> L. M. Huggins, Inspection of Jensen Bridge, E.F.A.P. 96-E, U.S. Department of Agriculture, Bureau of Public Roads, 1 and 2 April, 1933, Microfilm for Project F.A.P. 96-E, Utah Department of Transportation, Central Files, Salt Lake City.

<sup>7.</sup> R. C. Avery to Maurice Housecroft, 11 February 1933, Microfilm for Project F.A.P. 96-E, Utah Department of Transportation, Central Files, Salt Lake City.

<sup>8.</sup> Kerr, speech.

<sup>9.</sup> The Vernal (Utah) Express, 26 January 1933, p.1; Theodore a. Beyer to H. S. Kerr, 17 February 1933 and 20 March 1933.

<sup>10.</sup> The Vernal (Utah) Express, 12 January 1933, p.1.

the Ute Reservation at Ouray, Utah where it was reinstalled over the Green River. 11

Delays with construction began almost immediately. Very cold weather and strong winds hampered construction in January and February. On March 15, ice on the river began to break up and became jammed at the bridge site. This was then followed by high water that prevented effective work until July 15. These natural situations were compounded by other factors that served to further slow progress. Since the work was to have been completed by June 30, 1933, extensions to the contract length were obtained.

On March 31, 1933, James J. Burke & Co. contacted the State Road Commission because the company believed that it had encountered solid sandstone where none was expected while excavating in the river for the first of the bridge piers. An inspection of the project was made the following two days when it was discovered that the "solid" sandstone was a few large rocks, probably placed around the piers of the old bridge. At that time, one of the inspectors reported that progress on the project was "very disappointing and stands out in marked contrast when viewed in comparison with other emergency projects under way in this district." 16

<sup>11.</sup> J. C. Mulville to H. S. Kerr, 23 September 1933 and 30 September 1933, Microfilm for Project F.A.P. 96-E, Utah Department of Transportation, Central Files, Salt Lake City; J. C. Mulville to Paul Henderson, 6 November 1933, Microfilm for Project F.A.P. 96-E, Utah Department of Transportation, Central Files, Salt Lake City; and *The Vernal (Utah) Express*, 16 February 1933, p.1 and 26 October 1933, p.1.

<sup>12.</sup> J. C. Mulville to H. S. Kerr, 11 February 1933, Microfilm for Project F.A.P. 96-E, Utah Department of Transportation, Central Files, Salt Lake City.

<sup>13.</sup> James J. Burke to H. S. Kerr, 16 August 1933, Microfilm for Project F.A.P. 96-E, Utah Department of Transportation, Central Files, Salt Lake City.

<sup>14.</sup> Maurice Housecroft, memorandum, F.A.P 96-E - Jensen Bridge, 3 April 1933, Microfilm for Project F.A.P. 96-E, Utah Department of Transportation, Central Files, Salt Lake City.

<sup>15.</sup> L. M. Huggins, Memorandum to District Engineer Regarding Inspection of Utah Federal Aid Project "E" 96-e, 19 April 1933, Microfilm for Project F.A.P. 96-E, Utah Department of Transportation, Central Files, Salt Lake City; and Maurice Housecroft, Memorandum, F.A.P. 96-E - Jensen Bridge, 3 April 1933, Microfilm for Project F.A.P. 96-E, Utah Department of Transportation, Central Files, Salt Lake City.

<sup>16.</sup> Huggins, Inspection, 1 and 2 April 1933.

On April 13, the contractor reported that boulders too large to be handled by steamshovel had been encountered. The following day an inspection was made during which no evidence of large boulders was observed. At that time, James J. Burke & Co. requested that changes in construction of the westernmost pier be made that would have included terminating excavation before solid shale was encountered. Implementation of the proposal would have resulted in higher costs for materials and was not seen as a beneficial solution, so was considered unacceptable by the State Road Commission. 18

In late June, 1933, James J. Burke & Co. claimed it was encountering boulders elsewhere in its excavations in the river that were slowing progress. Inspectors for the State Road Commission believed the contractor's claim was exaggerated. This was a continuing source of contention because the contractor believed it had been misinformed about the character of the streambed when preparing its bid and was being forced to bear unforeseen costs. 19 The contractor asked for reimbursement of costs of over \$14,000 above the contract amount. The position of the State Road Commission was that tests at the site were correct in locating solid shale on which the bridge piers were to be anchored. The specifications in the plans called for removal of overlying deposits down to the shale and that even if boulders had not been detected above the shale in their tests, the boulders would need to be removed.<sup>20</sup> Throughout the construction period, boulders in the river bed were blamed for slowing down work since they were difficult for the contractor to remove and created problems in building the coffer dams around the pier excavations.<sup>21</sup> Overall, it appears that most of the delays in construction of the bridge and problems reported by the contractor were the result of poor planning, use of dilapidated equipment, and an underestimation

<sup>17.</sup> Huggins, Memorandum.

<sup>18.</sup> Huggins, Memorandum; and Housecroft, Memorandum, 19 April 1933.

<sup>19.</sup> J. C. Mulville to H. S. Kerr, 6 July 1933, Microfilm for Project F.A.P. 96-E, Utah Department of Transportation, Central Files, Salt Lake City; and James J. Burke to H. S. Kerr, 20 July 1933, 16 August, 1933, and 13 October 1933, Microfilm for Project F.A.P. 96-E, Utah Department of Transportation, Central Files, Salt Lake City.

<sup>20.</sup> H. S. Kerr to James J. Burke & Co., 10 July 1933, Microfilm for Project F.A.P. 96-E, Utah Department of Transportation, Central Files, Salt Lake City; and Maurice Housecroft to H. S. Kerr, 11 December 1933, Microfilm for Project F.A.P. 96-E, Utah Department of Transportation, Central Files, Salt Lake City.

<sup>21.</sup> Burke, 16 August 1933.

of the engineering requirements for excavating the pier footings by James J. Burke & Co.<sup>22</sup>

On June 30, 1933, the steel superstructure of the bridge began to be riveted together. A celebration for the opening of the new bridge was planned by the Uintah County Commissioners, the Vernal Lions Club, and the citizens of Jensen for October 28, 1933. 4 However, the dedication had to be postponed until November 11, so that the bridge could be finished. The bridge dedication was attended by H. S. Kerr and Maurice Housecroft of the Utah State Road Commission who gave speeches, as well as the Rev. George E. Guild, commander of the Witbeck Post No. 11, American Legion.

The day chosen for the ceremony was also the 15th observance of Armistice Day. This was seen as quite auspicious since the bridge was a vital element of the coast-to-coast Victory Highway, dedicated to World War I veterans. The Victory Highway, Highway 40, began in Atlantic City, New Jersey and ended in San Francisco. Completed in the mid-1920s, it was apparently the first direct transcontinental route that was considered to be an all-weather road. In 1933, it was one of five transcontinental routes. Since it was the most central it was also known as the "Main Street of America." At that time it was paved from the east coast to central Kansas. From Heber, Utah west it was oil and gravel. Besides speeches by a variety of dignitaries, festivities included a parade and historical pageant, a turkey dinner, and music by the Uintah High School band. Final inspection of the bridge was made on November 20, 1933.

<sup>22.</sup> J. C. Mulville to H. S. Kerr, 26 October 1933, Microfilm for Project F.A.P. 96-E, Utah Department of Transportation, Central Files, Salt Lake City.

<sup>23.</sup> Ibid.

<sup>24.</sup> J. C. Anderson to W. J. Parker, 19 October 1933, Microfilm for Project F.A.P. 96-E, Utah Department of Transportation, Central Files, Salt Lake City.

<sup>25.</sup> The Vernal (Utah) Express, 16 November 1933, p.1; and The San Francisco Chronicle, 29 March, 1923, p. 13.

<sup>26.</sup> Kerr, Speech.

<sup>27.</sup> The Vernal (Utah) Express, 9 November 1933, p. 1 and 16 November 1933, p.1.

<sup>28.</sup> Maurice Housecroft, Utah State road Commission, Final Inspections Report, 21 November 1933, Microfilm for Project F.A.P. 96-E, Utah Department of Transportation, Central Files, Salt Lake City.

# C. JAMES J. BURKE & CO., INC.

James J. Burke & Co., Inc. began business in either 1903 or 1904.<sup>29</sup> The founder, James J. Burke arrived in Salt Lake City in 1901 and became a partner with Joseph Dederichs in the engineering and contracting firm of Dederichs and Burke. In addition, Dederichs and Burke were agents for the Gates Iron Works of Chicago. 30 After splitting with Dederichs and setting up James J. Burke & Co., Burke also became the Salt Lake Branch manager of Chas. C. Moore & Co. of San Francisco that also had branch offices in Los Angeles, Seattle, and New York. Chas. C. Moore & Co. handled power, lighting, pumping, and mining machinery and served as plant contractors. According to advertisements in the Salt Lake City directory, James J. Burke & Co. was capable of constructing railway bridges, grain elevators, and other steel construction. The company could install mining and smelting plants and specialized in elevated trestle and heavy timber work. I By 1938, James J. Burke & Co. also advertised itself as a general contractor for buildings, bridges, and industrial plants. The company also served as the Intermountain Branch of Babcock & Wilcox & Co., suppliers of boilers, stokers, and pulverizers.<sup>32</sup> James J. Burke apparently died in 1945 or 1946 but the company continued in business under Fred E. Arnold, Fred Monahan, and Thomas P. Monahan until 1982 or 1983.<sup>33</sup> No information could be found about particular projects constructed by James J. Burke & Co. other than the Jensen Bridge.

<sup>29.</sup> R. L. Polk & Co., Salt Lake City Directory, 1903 (Salt Lake City: R. L. Polk & Co., 1903; and R. L. Polk & Co., Salt Lake City Directory, 1904 (Salt Lake City: R. L. Polk & Co., 1904.

<sup>30.</sup> R. L. Polk & Co., Salt Lake City Directory, 1901 (Salt Lake City: R. L. Polk & Co., 1901.

<sup>31.</sup> R. L. Polk & Co., Salt Lake City Directory, 1912 (Salt Lake City: R. L. Polk & Co., 1912).

<sup>32.</sup> R. L. Polk & Co., Salt Lake City Directory, 1938 (Salt Lake City: R. L. Polk & Co., 1938).

<sup>33.</sup> R. L. Polk & Co., Salt Lake City Directory, 1945 (Salt Lake City: R. L. Polk & Co., 1945); R. L. Polk & Co., Salt Lake City Directory, 1946 (Salt Lake City: R. L. Polk & Co., 1946); R. L. Polk & Co., Salt Lake City Directory, 1982 (Salt Lake City: R. L. Polk & Co., 1982); and R. L. Polk & Co., Salt Lake City Directory, 1983 (Salt Lake City: R. L. Polk & Co., 1983).

### III. ARCHITECTURAL INFORMATION

# A. PHYSICAL DESCRIPTION

The Jensen Bridge is a three span, steel Parker truss bridge set on concrete piers with concrete arch entry spans on each end. It is located immediately east of the town of Jensen, Utah over the Green River which flows south beneath the bridge. The bridge is 584 feet 8 inches long, has a 24 foot concrete deck, and has vertical clearance of 18 feet 1 inch. The steel spans are each 175 feet long and 25½ feet wide between the steel upright members. The east and west approaches are 31 feet and 21½ feet long respectively.

The running surface of the bridge is supported by five parallel girders and eight equally spaced iron cross girders per span. The two end cross girders of each span are more massive than the intervening cross girders and serve as major connecting points for the bridge superstructure. The top chord segment of each span consists of 16 by 18 inch U-shaped beams with single lacing on the open side. The base ends of the top chords are connected to the ends of lower lateral chords that run below the level of the crossgirders and are further connected to the major crossgirders at the ends of each span. Also connected at these points are cast steel shoes that rest on the concrete piers. The shoes on the east end of each span are fixed; those on the west end rock to allow for expansion. The lower lateral chords are made of parallel U-shaped plates connected by short lengths of steel plates riveted at regular intervals for the lengths of the chords.

Angled and upright supports between the top chords and lower lateral chords are 8 by 10 inch I-beam columns attached top and bottom to the top and lower chords with riveted gusset plates. The middle supports are connected midway up by longitudinal braces made of angle irons with single lacing. At each junction of the supports with the top chords, horizontal I-beam cross members and crossing stabilizers, made of angle iron connected by single lacing, span the roadway. Where the stabilizers cross, they are joined by riveted plates. Additional crossing and angled supports are present above each span end. These are made of angle irons with single lacing. Beneath the bridge, crossing stabilizers of angle iron also connect the lower lateral chords where the columns join from above.

The east and west approaches are poured concrete. These have closed spandrels arching between concrete pillars in rows of four supporting a large concrete cap and crossmember. The crossmember is placed so that the end cross girder of a steel span can be anchored to the cap. The end of the arches on each end of the bridge terminate in solid concrete walls forming the bridge abutments. All of the concrete work has a plain finish and all sharp edges are beveled.

Two poured concrete piers in the river support the ends of metal spans. These are solid piers that are rounded on the downstream side and stepped on the upstream side. The upstream side is beveled to a point, with an iron strip projecting on the leading edge to break ice and divert floating debris.

A 6 inch wide and 12 inch tall curb forms the edge of the poured concrete running surface. Just inside the curbs, regularly spaced 4 inch pipe drains project through the deck for the length of the bridge. A hand rail also runs the full length of the bridge. This is a riveted angle iron and plate railing with a 4 inch pipe railing above. The hand rail is supported by angle iron posts anchored to the outside edge of the concrete running surface and the lower lateral chords. Both the curbs and hand rails curve outward where they terminate at the ends of the bridge. Metal guard rails have been added to the east and west ends of the bridge. The guard rails extend 100 feet east along both sides of the roadway at the east approach and 30 and 75 feet on the north and south side of the roadway respectively on the west approach.

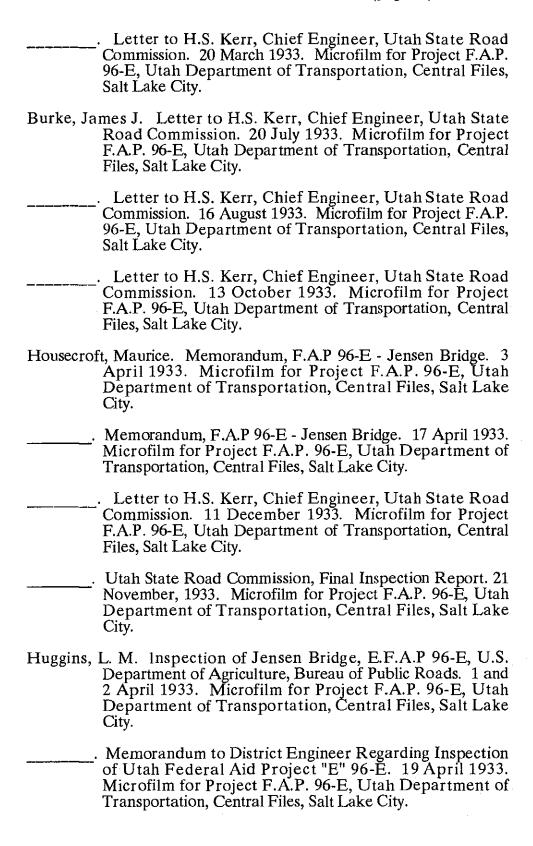
### B. MODIFICATIONS

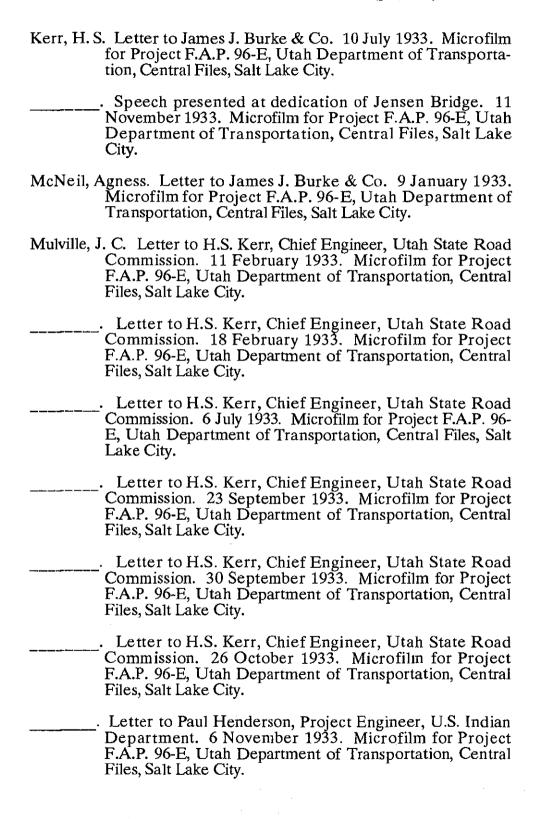
The bridge has been only slightly modified. This has been through the attachment of a metal water pipe on the lower lateral chords on the north side of the bridge and attachment of wooden telephone insulator arms to bridge columns at regular intervals for the length of the bridge. No other alterations are evident.

# IV. REFERENCES CITED

### A. PRIMARY AND UNPUBLISHED SOURCES

- Anderson, J. C. Letter to W. J. Parker, Chairman, State Road Commission. 19 October 1933. Microfilm for Project F.A.P. 96-E, Utah Department of Transportation, Central Files, Salt Lake City.
- Avery, R. C. Letter to Maurice Housecroft, Bridge Engineer, Utah State Road Commission. 11 February 1933. Microfilm for Project F.A.P. 96-E, Utah Department of Transportation, Central Files, Salt Lake City.
- Beyer, Theodore A. Letter to H.S. Kerr, Chief Engineer, Utah State Road Commission. 17 February 1933. Microfilm for Project F.A.P. 96-E, Utah Department of Transportation, Central Files, Salt Lake City.





### B. SECONDARY SOURCES

- Cowan, Ila W. Jensen, Utah: Where Is It? Who Are Its People? Provo: Community Press, 1979.
- Polk, R. L., & Co. R. L. Polk & Co.'s Salt Lake City Directory, 1901. Salt Lake City: R. L. Polk & Co., Publishers, 1901.
- Polk, R. L., & Co. R. L. Polk & Co.'s Salt Lake City Directory, 1903. Salt Lake City: R. L. Polk & Co., Publishers, 1903.
- Polk, R. L., & Co. R. L. Polk & Co.'s Salt Lake City Directory, 1904. Salt Lake City: R. L. Polk & Co., Publishers, 1904.
- Polk, R. L., & Co. R. L. Polk & Co.'s Salt Lake City Directory, 1945. Salt Lake City: R. L. Polk & Co., Publishers, 1945.
- Polk, R. L., & Co. R. L. Polk & Co.'s Salt Lake City Directory, 1946. Salt Lake City: R. L. Polk & Co., Publishers, 1946.
- Polk, R. L., & Co. R. L. Polk & Co.'s Salt Lake City Directory, 1982. Salt Lake City: R. L. Polk & Co., Publishers, 1982.
- Polk, R. L., & Co. R. L. Polk & Co.'s Salt Lake City Directory, 1983. Salt Lake City: R. L. Polk & Co., Publishers, 1983.
- The San Francisco Chronicle, 29 March 1923.
- The Vernal Express, 12 and 26 January 1933, 16 February 1933, 26 October 1933, and 9 and 16 November 1933.